What is claimed is:

1- A semiconductor device including;

- A chip having an array of flip chip contact terminals on the first surface bonded to mirroring contact pads on the first major surface of a substrate,

- an adhesive polymerized by energy from infrared radiation of the second surface of said chip mechanically connecting and filling the space between the chip and substrate.

2- A semiconductor device as in claim 1 wherein said flip chip contacts comprise gold bumps.

3- A semiconductor device as in claim 1 wherein said substrate contact pads comprise a conductor having a gold surface layer.

4- A semiconductor device as in claim 1 wherein said flip chip contacts comprise copper.

5-A semiconductor device as in claim 1 wherein said flip chip contacts comprise metal coated spheres.

6-A semiconductor device as in claim 1 wherein said substrate comprises a flexible polymer film.

7- A semiconductor device as in claim 1 wherein said the substrate may be comprised of any of a number of dielectric materials.

8- A semiconductor device as in claim 1 wherein the infrared energy absorbed by the chip is programmable and controllable.

9- A semiconductor device as in claim 1 wherein said adhesive is a thermosetting polymer having rapid gel time.

10- A semiconductor device as in claim 1 wherein said adhesive is void free.

11- A semiconductor device as in claim 1 wherein said adhesive is a non-conductive polymer.

12- A semiconductor device as in claim 1 wherein said adhesive is an anisotropic conductive adhesive.

13- A method of assembling a flip chip semiconductor device having a polymeric adhesive mechanically bonding a substrate to chip, and filling the space between contacts including the following steps:

- dispensing a controlled amount of a thermosetting adhesive paste onto a patterned substrate,
- aligning a chip having protruding contact terminals to mating contact pads on said substrate,
- thermal compression bonding the contact terminals,
- exposing the back surface of the chip to infrared radiation, whereby heat generated causes said adhesive to flow between the surfaces of substrate and chip, to surround the contact terminals, and subsequently to solidify, and adhere the assemblage, and
- controlling the ramp and duration time, and the intensity of infrared exposure by a computer input.

14- A method for assembling a flip chip device as in claim 13 wherein bonding of said terminals is by thermosonic bonding.

15- A method for assembling a flip chip device as in claim 13 wherein the time for adhesive to flow between the chip and substrate and to solidify is equal to or less than the time for aligning and bonding terminals.

16- A reel to reel method for assembling a plurality of flip chip semiconductor devices including the following steps:

- feeding patterned flexible tape stepwise from a reel onto a work station; depositing a rapidly curing thermosetting adhesive is deposited on a specified area of the tape for each device,

-feeding the tape to the next work station; aligning a semiconductor chip having protruding contact terminals to mating contact pads on said substrate; and binding the terminals by thermal compression bonding;

- indexing the tape to a work station having an infrared radiation source; exposing the back surface of said chip to said infrared radiation whereby the generated heat causes said adhesive to flow between the surfaces of substrate and chip, surrounding the contact terminals, and subsequently solidifying to adhere the assemblage; and

-winding the tape with assembled devices onto a take up reel.

17- A method as in claim 16 wherein the duration of infrared exposure is less than the alignment and bonding time.

18- A method as in claim 16 wherein the terminals are bonded by thermo-sonic bonding.

19- An apparatus for selectively heating a flip chip semiconductor device relative to the substrate for curing the supporting adhesive comprising:

-an infrared lamp emitting radiation in the range of 0.5 to 2 microns directed through a condenser to a mirror at approximately a 45-degree angle,

- a quartz lens having its perimeter equal to or greater than that of the device under assembly,

-a work station capable of supporting a semiconductor device bonded to a substrate wherein the back side of said device is positioned directly under said lens,

- a programmable controller having inputs of ramp, duration and intensity of exposure, and

-an exhaust system surrounding the work station.